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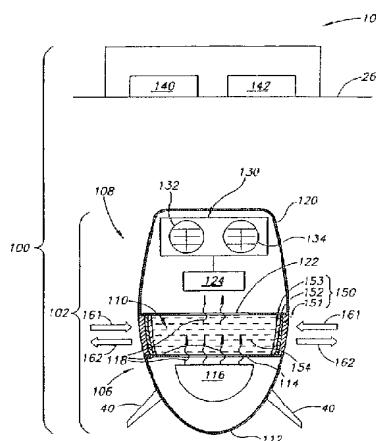
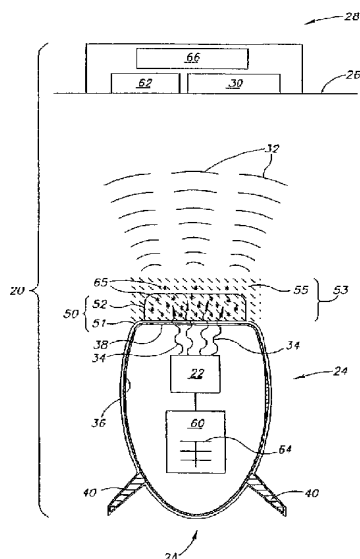
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[Continued on next page]

(54) **Title:** GLUCOMETER COMPRISING AN IMPLANTABLE LIGHT SOURCE



(57) **Abstract:** Apparatus for assaying an analyte in a body comprising: at least one light source (22) implantable in the body controllable to illuminate a tissue region in the body with light at at least one wavelength that is absorbed by the analyte and as a result generates photoacoustic waves in or changes in an acoustic property of the tissue region; at least one acoustic sensing transducer (30) adapted to be coupled to the body for receiving acoustic energy from the tissue region and generating signals responsive thereto; and a processor (66) that receives the signals and processes them to determine a concentration of the analyte in the illuminated tissue region. Further, an apparatus for assaying an analyte in an interstitial fluid in a body comprising an implantable light source (116) and an implantable photosensor (124).

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SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IL2004/001166

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 048 265 A (V.LILIENFELD-TOAL, HERMANN, PROF. DR. MED) 2 November 2000 (2000-11-02) abstract	1-4,8-24
A	WO 02/15776 A (GLUCON INC; NAGAR, RON; PESACH, BENNY; BEN-AMI, UDI) 28 February 2002 (2002-02-28) abstract	1-4,8-24
A	US 5 571 152 A (CHEN ET AL) 5 November 1996 (1996-11-05) cited in the application abstract; figures 1,4	16-18
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

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Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/074034 A1 (PENNER AVL ET AL) 17 April 2003 (2003-04-17) cited in the application abstract	16,19,20
A	----- MARTIN, W.B., MIROV, S., VENUGOPALAN, R.: "Using two discrete frequencies within the middle infrared to quantitatively determine glucose in serum" JOURNAL OF BIOMEDICAL OPTICS, vol. 7, no. 4, October 2002 (2002-10), pages 613-617, XP002324543 cited in the application abstract -----	21-24

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL2004/001166

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-4, parts of 8-24

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4, parts of 8-24

Apparatus for assaying an analyte in a body in which the concentration of the analyte is determined based on the measurement of acoustic phenomena originating from photoacoustic stimulation processes.

2. claims: 5-7, parts of 8-24

Apparatus for assaying an analyte in a body in which the concentration of the analyte is determined based on the measurement of the absorption of light.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IL2004/001166

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1048265	A	02-11-2000	EP 1048265 A1	02-11-2000
			JP 3594534 B2	02-12-2004
			JP 2001025465 A	30-01-2001
			US 6484044 B1	19-11-2002

WO 0215776	A	28-02-2002	AU 8006601 A	04-03-2002
			EP 1313396 A1	28-05-2003
			WO 0215776 A1	28-02-2002
			JP 2004506467 T	04-03-2004
			US 2003167002 A1	04-09-2003

US 5571152	A	05-11-1996	AU 694868 B2	30-07-1998
			AU 5424596 A	11-12-1996
			CA 2217738 A1	28-11-1996
			EP 0956090 A1	17-11-1999
			JP 11505744 T	25-05-1999
			WO 9637255 A1	28-11-1996

US 2003074034	A1	17-04-2003	US 6628989 B1	30-09-2003
			AU 1263702 A	29-04-2002
			CA 2422636 A1	25-04-2002
			EP 1331969 A1	06-08-2003
			WO 03033067 A2	24-04-2003
			JP 2004511313 T	15-04-2004
			WO 0232502 A1	25-04-2002
			US 2002177782 A1	28-11-2002
			US 2004172083 A1	02-09-2004
			US 2002045921 A1	18-04-2002
